

IFWO

RAW SEQUENCE LISTING DATE: 08/20/2004
PATENT APPLICATION: US/10/665,990A TIME: 10:38:11

Input Set : A:\PTO.LM.txt

Output Set: N:\CRF4\08202004\J665990A.raw

```
4 <110> APPLICANT: Apicella, Michael A.
             Edwards, Jennifer L.
      7 <120> TITLE OF INVENTION: Vaccine and compositions for the prevention and treatment of
Neisserial
             infections
     10 <130> FILE REFERENCE: 17023-031001
     12 <140> CURRENT APPLICATION NUMBER: US 10/665,990A
     13 <141> CURRENT FILING DATE: 2003-09-19
     15 <150> PRIOR APPLICATION NUMBER: US 10/621,184
    16 <151> PRIOR FILING DATE: 2003-07-15
    18 <150> PRIOR APPLICATION NUMBER: US 10/066,551
    19 <151> PRIOR FILING DATE: 2002-01-31
    21 <150> PRIOR APPLICATION NUMBER: US 60/344,452
    22 <151> PRIOR FILING DATE: 2001-10-23
    24 <150> PRIOR APPLICATION NUMBER: US 60/310,356
    25 <151> PRIOR FILING DATE: 2001-08-06
    27 <150> PRIOR APPLICATION NUMBER: US 60/266,070
    28 <151> PRIOR FILING DATE: 2001-01-31
    30 <160> NUMBER OF SEQ ID NOS: 32
    32 <170> SOFTWARE: FastSEQ for Windows Version 4.0
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    36 <211> LENGTH: 2015
    37 <212> TYPE: PRT
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                                       25
    45 Ala Gly Ser Ser Val Ser Val Ser Leu Lys Thr Ser Gly Asp Leu Cys
                                   40
    47 Gly Lys Leu Lys Thr Thr Leu Lys Thr Leu Val Cys Ser Leu Val Ser
                               55
    49 Leu Ser Met Val Leu Pro Ala His Ala Gln Ile Thr Thr Asp Lys Ser
    51 Ala Pro Lys Asn Gln Gln Val Val Ile Leu Lys Thr Asn Thr Gly Ala
                                           90
    53 Pro Leu Val Asn Ile Gln Thr Pro Asn Gly Arg Gly Leu Ser His Asn
                                       105
    55 Arg Tyr Thr Gln Phe Asp Val Asp Asn Lys Gly Ala Val Leu Asn Asn
                                   120
    57 Asp Arg Asn Asn Asn Pro Phe Leu Val Lys Gly Ser Ala Gln Leu Ile
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135

59 Leu Asn Glu Val Arg Gly Thr Ala Ser Lys Leu Asn Gly Ile Val Thr

140

130

58

RAW SEQUENCE LISTING

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Input Set : A:\PTO.LM.txt

60	145					150					155					160
61	Val	Gly	Gly	Gln	Lys	Ala	Asp	Val	Ile	Ile	Ala	Asn	Pro	Asn	Gly	Ile
62	_	_			165		_			170		_		_	175	
	Thr	Val	Asn	_	Gly	Gly	Phe	Lys		Val	Gly	Arg	Gly		Leu	Thr
64	71.	~1	77.	180	C1	T 7 a	~1	T ~	185	~1	71.	т	mla sa	190	Dha	71
66	тте	GIY	195	PIO	GIII	TIE	сту	Lys 200	Asp	СТУ	Ala	Leu	205	СТУ	Pne	Asp
	T-1	λrσ		Gl _V	Thr	Len	Thr	Val	Glv.	Δla	Δla	Glv		Δen	Λen	Luc
68	vai	210	GIII	СТУ	1111	пец	215	vai	Gry	пта	лια	220	rrp	POII	дар	пув
	Glv		Ala	Asp	Tvr	Thr		Val	Leu	Ala	Ara		Val	Ala	Leu	Gln
	225	1			-1-	230	1				235					240
		Lys	Leu	Gln	Gly	Lys	Asn	Leu	Ala	Vál	Ser	Thr	Gly	Pro	Gln	Lys
72	_	_			245	_				250			_		255	_
73	Val	Asp	Tyr	Ala	Ser	Gly	Glu	Ile	Ser	Ala	Glÿ	Thr	Ala	Ala	Gly	Thr
74				260					265					270		
75	Lys	Pro	Thr	Ile	Ala	Leu	Asp	Thr	Ala	Ala	Leu	Gly	Gly	Met	Tyr	Ala
76			275					280			_	_	285	_		
	Asp		Ile	Thr	Leu	Ile		Asn	Glu	Lys	Gly		Gly	Val	Lys	Asn
78	3 1 -	290	ml	*	a 1	27 -	295	•	a 1	T	- 1-	300	m)	a	Q	~1
		GIY	Tnr	ьеu	GIU		Ala	Lys	GIN	ьеи	315	vaı	Thr	ser	ser	320
	305	Tlo	Clu	7) cm	Cor	310	Λνα	Ile	717	Thr		Λla	7 an	Clar	Thr	
82	Arg	116	GIU	Maii	325	GIY	Arg	116	Ата	330	1111	ліа	дър	Gry	335	Giu
	Ala	Ser	Pro	Thr		Leu	Ser	Ile	Glu		Thr	Glu	Lvs	Glv		Ala
84		-		340	-1-				345				-1-	350		
85	Gly	Thr	Phe	Ile	Ser	Asn	Gly	Gly	Arq	Ile	Glu	Ser	Lys	Gly	Leu	Leu
86			355				_	360	_				365	_		
87	Val	Ile	Glu	Thr	Gly	Glu	Asp	Ile	Ser	Leu	Arg	Asn	Gly	Ala	Val	Val
88		370					3.75					380				
89	Gln	Asn	Asn	Gly	Ser	_	Pro	Ala	Thr	Thr	Val	Leu	Asn	Ala	Gly	His
	385		_		_	390				_	395		_		_	400
	Asn	Leu	Val	Ile		Ser	Lys	Thr	Asn		Asn	Asn	Ala	Lys		Ser
92	7 T -	70	T	0	405	Q1	α1	3	ml	410	-1.	70	70	3 .7 -	415	т1 -
	АТа	Asn	ьeu		Ата	GIĀ	GIY	Arg		Tnr	ıте	Asn	Asp		Thr	iie -
94	Gln	7.7.5	Clar	420	Cor	v-1	Тугу	Ser	425	Thr	Tarc	C1 v	7 cn	430	Glu	Leu
96	GIII	MIG	435	SET	per	vaı	TYL	440	per	1111	шуъ	Gry	445	TIIL	Giu	ьец
	Glv	Glu		Thr	Ara	Tle	Tle	Ala	Glu	Asn	Val	Thr		Leu	Ser	Asn
98	O _T y	450	11011		9		455	1114	Olu	11011	• • • •	460	• • • • • • • • • • • • • • • • • • • •	Lcu	001	11011
	Gly		Ile	Gly	Ser	Ala		Val	Ile	Glu	Ala		Asp	Thr	Ala	His
	465			-		470					475	-	-			480
101	. Ile	Glu	Ser	Gly	/ Lys	Pro	Lei	ı Ser	Leu	ı Glu	ı Thr	Ser	Thr	Va]	Ala	Ser
102	3				485	5 .				490)				495	<u>.</u>
103	Asr	11ϵ	e Arg	J Leu	ı Asr	ı Asr	Gly	/ Asr	11ϵ	Lys	Gly	gly	Lys	Glr	ı Leı	ı Ala
104				500					505					510		
105	Leu	Let	ı Ala	Asp	as (Asr	ıle	e Thr	Ala	Lys	Thr	Thr	Asr	Leu	ı Asr	Thr
106			515					520					525			
		_		Let	ı Tyr	· Val			Gly	/ Lys	: Asp			Lei	ı Asr	ı Val
108	}	530)				535	•				540)			

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	Asp 545	Lys	Asp	Leu	Ser	Ala 550	Ala	Ser	Ile	His	Leu 555	Lys	Ser	Asp	Asn	Ala 560
		His	Ile	Thr			Ser	Lys	Thr			Ala	Ser	Lys		
112	Glv	Val	Glu	Ala	565 Glv	Leu	Leu	Asn	Val	570 Thr	Asn	Thr	Asn	Leu	575 Arg	Thr
114				580					585					590		
115 116	Asn	Ser	Gly 595	Asn	Leu	His	Ile	Gln 600	Ala	Ala	Lys	Gly	Asn 605	Ile	Gln	Leu
	Arg	Asn		Lys	Leu	Asn	Ala		Lys	Ala	Leu	Glu		Thr	Ala	Leu
118		610					615	_			_	620		_	_	
		Gly	Asn	Ile	Val		Asp	Gly	Leu	His		Val	Ser	Ala	Asp	
	625		_	_	_	630	_		_		635	_,	1	~ 3		640
	His	Val	Ser	Leu		Ala	Asn	GIY	Asn		Asp	Phe	Thr	GIY		Asn
122	m)	.	m)	27.	645	73 T =	7	77-7	7	650	al. .	0	77-7	<u>ما</u>	655	C1
	Thr	Leu	Thr	Ala	гуѕ	Ата	Asp	vai		Ата	GIY	ser	vai	670	гуѕ	GIY
124	70	T	T	660	7	7	mb ea	7. ~~	665	Πb ∞	Cox	Cox	Cox		7\ cm	Tlo
	Arg	ьeu	ьуs 675	Ala	Asp	ASII	1111	680	me	1111	ser	Ser	685	GIY	Asp	rre
126	Thr	Ť OU		Ala	Clv	7 cn	Clu		Cln	I 611	Gl v	Λαn		Lvc	Gln	Δra
127	1111	690	val	на	Gry	ASII	695	116	GIII	пец	Gry	700	СТУ	шую	OIII	ALG
	Δen		Tle	Asn	Glv	Taye		Tle	Ser	Tle	Lvs		Asn	Glv	Glv	Asn
	705	DCI	110	Abii	Ory	710	1115	110	DCI.		715	11011	11011	017	011	720
		Asp	Len	Lys	Asn		Asn	Val				Ser	Glv	Ala	Leu	
132		1105	Dea	275	725					730	-1-		1		735	
	Ile	His	Ser	Asp							Asn	Thr	Lys	Leu	Glu	Ser
134				740					745				•	750		
135	Thr	His	Asn	Thr	His	Leu	Asn	Ala	Gln	His	Glu	Arg	Val	Thr	Leu	Asn
136			755					760					765			-
137	Gln	Val	Asp	Ala	Tyr	Ala	His	Arg	His	Leu	Ser	Ile	Thr	Gly	Ser	Gln
138		770					775					780				
139	Ile	Trp	Gln	Asn	Asp		Leu	Pro	Ser	Ala	Asn	Lys	Leu	Val	Ala	Asn
	785					790					795					800
	Gly	Val	Leu	Ala		Asn	Ala	Arg	Tyr		Gln	Ile	Ala	Asp		Thr
142					805	_	_		_	810					815	
	Thr	Leu	Arg	Ala	Gly	Ala	Ile	Asn		Thr	Ala	GLY	Thr		ьeu	vaı
144	_	_		820		_	_	_	825	** 7	~	em1	-	830	.	a1
	Lys	Arg		Asn	ше	Asn	Trp		Thr	vaı	ser	Thr		Thr	ьeu	GIU
146	7	7	835	a1	T	T ~	D-0-0	840	77.	01	71 200	Tou	845	т1о	C1.,	ח ד ת
	-		Ala	Glu	ьeu	ьуѕ		ьeu	Ald	GIY	Arg		ASII	ire	GIU	Ата
148		850	Clv	Thr	Lou	Thr	855	Clu	Dro	Λla	7) cm	860	т1Д	Sar	7\ T =	ніс
	865	ser	Gry	1111	ьец	870	116	GIU	PIO	Ala	875	Arg	116	SCT	на	880
		7 cn	T 011	Ser	Tla		Thr	Gly	Glv	Lare		T.011	T.611	Ser	Δla	
151	TIII	АБР	ьeu	SET	885	пуъ	1111	Gry	Gry	890	пси	пси	пси	DCI	895	цур
	Clv	G1 v	λen	Ala		Δla	Pro	Ser	Δla		val	Ser	Ser	Len		Ala
154	Сту	O _T y	11911	900	Сту	111 U		UUL	905	U111				910		
	Ivs	Glv	Asn	Ile	Ara	Len	Val	Thr		Glu	Thr	Asp	Leu		Glv	Ser
156	-,5	- <i>y</i>	915		9			920	1				925		1	· -
	Lvs	Ile		Ala	Glv	Lvs	Asn		Val	Val	Ala	Thr		Lys	Gly	Lys
	_1 _				1	1.5								_	•	-

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158		930					935					940				
159	Leu	Asn	Ile	Glu	Ala	Val	Asn	Asn	Ser	Phe	Ser	Asn	Tyr	Phe	Pro	Thr
	945					950					955					960
	Gln	Lys	Ala	Ala	Glu	Leu	Asn	Gln	Lys		Lys	Glu	Leu	Glu	Gln	Gln
162					965					970					975	
	Ile	Ala	Gln		Lys	Lys	Ser	Ser		Lys	Ser	Lys	Leu		Pro	Thr
164	_			980	_	_	_	_	985	_,	_		~3	990		_
	Leu	GIn		GIu	Arg	Asp	Arg			Phe	Tyr	He	Gln		lle	Asn
166	T	a1	995	T	α1	T	T	1000			T	~1	1005		Cl n	70 70
	-	101(гуѕ	GIY	ьуѕ	Lys 1015		цуѕ	GIĀ	гуя	1020	Tyr	ьец	GIII	Ala
168				λlο	Gln	λan			T.211	т1Б	Ser		Gln	Glv	Tle	Glu
	1025		BCI	AIA	GIII	1030		дад	шец	110	1035		0111	O ₁ y	110	1040
			Glv	Ser	Asp			Ala	Ser	Lvs			Asn	Leu	His	
172		001	011	001	1045		****		202	1050					1055	
	Ala	Glv	Val	Leu			Ala	Ala	Asp			Ala	Ala	Ala		
174		1		1060		_1			106					1070		
	Ile	Asp	Gly	Ile	Thr	Asp	Gln	Tyr	Glu	Ile	Gly	Lys	Pro	Thr	Tyr	Lys
176		-	1075			-		1080			•	-	1085		-	-
177	Ser	His	Tyr	Asp	Lys	Ala	Ala	Leu	Asn	Lys	Pro	Ser	Arg	Leu	Thr	Gly
178		1090					1095					1100				
179	Arg	Thr	Gly	Val	Ser	Ile	His	Ala	Ala	Ala	Ala	Leu	Asp	Asp	Ala	Arg
180	1109	5 .				1110)				1111	5				1120
181	Ile	Ile	Ile	Gly	Ala	Ser	Glu	Ile	Lys	Ala	Pro	Ser	Gly	Ser	Ile	Asp
182					1125					1130					1135	
183	Tle	Lys	Ala	His	Ser	Acn	Tle	Val	Len	GI11	Ala	Glv	Gln	Δcn	Acn	$\nabla \Gamma \simeq$
		-1		1110		TISP.		VUI	псц	OIG			0111	1,1011	TIPP	Ата
184				1140)				1145	5				1150)	
184 185	Tyr		Phe	1140 Leu)			Gly	1145 Lys	5			Ile	1150 Ile)	
184 185 186	Tyr	Thr	Phe	1140 Leu) Lys	Thr	Lys	Gly 1160	1145 Lys)	5 Ser	Gly	Lys	Ile 1169	1150 Ile) Arg	Lys
184 185 186 187	Tyr	Thr Lys	Phe 1155 Phe	1140 Leu) Lys	Thr	Lys Arg	Gly 1160 Asp	1145 Lys)	5 Ser	Gly	Lys Met	Ile 1165 Pro	1150 Ile) Arg	Lys
184 185 186 187 188	Tyr Thr	Thr Lys 1170	Phe 115! Phe)	1140 Leu Thr	Lys Ser	Thr Thr	Lys Arg	Gly 1160 Asp	1149 Lys) His	Ser Leu	Gly Ile	Lys Met 1180	Ile 1165 Pro	1150 Ile 5 Ala	Arg Pro	Lys Val
184 185 186 187 188 189	Tyr Thr Glu	Thr Lys 1170 Leu	Phe 1155 Phe) Thr	1140 Leu Thr	Lys Ser	Thr Thr Gly	Lys Arg 1175 Ile	Gly 1160 Asp	1149 Lys) His	Ser Leu	Gly Ile Ala	Lys Met 1180 Gly	Ile 1165 Pro	1150 Ile 5 Ala	Arg Pro	Lys Val Glu
184 185 186 187 188 189	Tyr Thr Glu 1189	Thr Lys 1170 Leu	Phe 1155 Phe) Thr	1140 Leu Thr	Lys Ser Asn	Thr Thr Gly 1190	Lys Arg 1179 Ile	Gly 1160 Asp Thr	1149 Lys) His Leu	Ser Leu Gln	Gly Ile Ala	Lys Met 1180 Gly	Ile 1165 Pro) Gly	1150 Ile 5 Ala Asn	Arg Pro	Lys Val Glu 1200
184 185 186 187 188 189 190	Tyr Thr Glu 1189	Thr Lys 1170 Leu	Phe 1155 Phe) Thr	1140 Leu Thr	Lys Ser Asn Arg	Thr Thr Gly 1190 Phe	Lys Arg 1179 Ile	Gly 1160 Asp Thr	1149 Lys) His Leu	Ser Leu Gln Ala	Gly Ile Ala 1195 Gly	Lys Met 1180 Gly	Ile 1165 Pro	1150 Ile 5 Ala Asn	Arg Pro Ile Leu	Lys Val Glu 1200 Val
184 185 186 187 188 189 190 191	Tyr Thr Glu 1189 Ala	Thr Lys 1170 Leu 5 Asn	Phe 1159 Phe) Thr	1140 Leu Thr Ala	Lys Ser Asn Arg	Thr Thr Gly 1190 Phe	Lys Arg 1175 Ile) Asn	Gly 1160 Asp Thr	Lys His Leu	Ser Leu Gln Ala	Gly Ile Ala 1199 Gly	Lys Met 1180 Gly Lys	Ile 1165 Pro) Gly Val	1150 Ile Ala Asn	Arg Pro Ile Leu 1215	Lys Val Glu 1200 Val
184 185 186 187 188 189 190 191 192	Tyr Thr Glu 1189 Ala	Thr Lys 1170 Leu 5 Asn	Phe 1159 Phe) Thr	1140 Leu Thr Ala Thr	Lys Ser Asn Arg 1205	Thr Thr Gly 1190 Phe	Lys Arg 1175 Ile) Asn	Gly 1160 Asp Thr	Lys His Leu Pro	Ser Leu Gln Ala 1210	Gly Ile Ala 1199 Gly	Lys Met 1180 Gly Lys	Ile 1165 Pro) Gly	1150 Ile Ala Asn Thr	Arg Pro Ile Leu 1215	Lys Val Glu 1200 Val
184 185 186 187 188 189 190 191 192 193 194	Tyr Thr Glu 1189 Ala	Thr Lys 1170 Leu S Asn	Phe 1159 Phe Thr Thr	1140 Leu Thr Ala Thr Glu 1220	Lys Ser Asn Arg 1205 Leu	Thr Gly 1190 Phe Gln	Lys Arg 1175 Ile Asn Leu	Gly 1160 Asp Thr Ala	Lys His Leu Pro Ala	Ser Leu Gln Ala 1210 Glu	Gly Ile Ala 1195 Gly Glu	Lys Met 1180 Gly Lys Gly	Ile 1165 Pro Gly Val Ile	1150 Ile Ala Asn Thr	Pro Ile Leu 1215 Lys	Lys Val Glu 1200 Val His
184 185 186 187 188 189 190 191 192 193 194	Tyr Thr Glu 1189 Ala	Thr Lys 1170 Leu S Asn	Phe 1155 Phe Thr Thr Glu	1140 Leu Thr Ala Thr Glu 1220 Val	Lys Ser Asn Arg 1205 Leu	Thr Gly 1190 Phe Gln	Lys Arg 1175 Ile Asn Leu	Gly 1160 Asp Thr Ala Leu	Lys His Leu Pro Ala 1225	Ser Leu Gln Ala 1210 Glu	Gly Ile Ala 1195 Gly Glu	Lys Met 1180 Gly Lys Gly	Ile 1165 Pro Gly Val Ile	1150 Ile 5 Ala Asn Thr His 1230 Lys	Pro Ile Leu 1215 Lys	Lys Val Glu 1200 Val His
184 185 186 187 188 189 190 191 192 193 194 195 196	Tyr Thr Glu 1189 Ala Ala Glu	Thr Lys 1170 Leu S Asn Gly Leu	Phe 1155 Phe Thr Thr Glu Asp 1235	Thr Ala Thr Glu 1220 Val	Lys Ser Asn Arg 1205 Leu Color	Thr Thr Gly 1190 Phe Gln Lys	Lys Arg 1175 Ile Asn Leu Ser	Gly 1160 Asp Thr Ala Leu Arg	Lys His Leu Pro Ala 1229 Arg	Ser Leu Gln Ala 1210 Glu Dhe	Gly Ile Ala 1195 Gly Glu Ile	Lys Met 1180 Gly Lys Gly Gly	Ile 1165 Pro Gly Val Ile Ile 1245	1150 Ile Ala Asn Thr His 1230 Lys	Arg Pro Ile Leu 1219 Lys Val	Lys Val Glu 1200 Val His
184 185 186 187 188 189 190 191 192 193 194 195 196 197	Tyr Thr Glu 1189 Ala Ala Glu Lys	Thr Lys 1170 Leu Asn Gly Leu Ser	Phe 1155 Phe Thr Thr Glu Asp 1235 Asn	Thr Ala Thr Glu 1220 Val	Lys Ser Asn Arg 1205 Leu Color	Thr Thr Gly 1190 Phe Gln Lys	Lys Arg 1179 Ile Asn Leu Ser Asn	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu	Lys His Leu Pro Ala 1229 Arg	Ser Leu Gln Ala 1210 Glu 5	Gly Ile Ala 1195 Gly Glu Ile	Lys Met 1180 Gly Lys Gly Gly Gly	Ile 1165 Pro Gly Val Ile Ile 1245 Lys	1150 Ile Ala Asn Thr His 1230 Lys	Arg Pro Ile Leu 1219 Lys Val	Lys Val Glu 1200 Val His
184 185 186 187 188 190 191 192 193 194 195 196 197 198	Tyr Thr Glu 1189 Ala Ala Glu Lys	Lys 1170 Leu San Gly Leu Ser 1250	Phe 1155 Phe Thr Thr Glu Asp 1235 Asn	Thr Ala Thr Glu 1220 Val Tyr	Lys Ser Asn Arg 1205 Leu Gln Ser	Thr Thr Gly 1190 Phe Gln Lys Lys	Arg 1175 11e Asn Leu Ser Asn 1255	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu	1145 Lys His Leu Pro Ala 1225 Arg	Ser Leu Gln Ala 1210 Glu Phe Asn	Gly Ile Ala 1195 Gly Glu Ile Glu	Met 1180 Gly Lys Gly Gly Thr	Ile 1165 Pro) Gly Val Ile Ile 1245 Lys	1150 Ile Ala Asn Thr His 1230 Lys Leu	Arg Pro Ile Leu 1215 Lys Val	Lys Val Glu 1200 Val His Gly Val
184 185 186 187 188 190 191 192 193 194 195 196 197 198	Tyr Thr Glu 1189 Ala Ala Glu Lys Arg	Lys 1170 Leu 5 Asn Gly Leu Ser 1250 Val	Phe 1155 Phe Thr Thr Glu Asp 1235 Asn	Thr Ala Thr Glu 1220 Val Tyr	Lys Ser Asn Arg 1205 Leu Gln Ser	Thr Thr Gly 1190 Phe Gln Lys Lys Thr	Arg 1175 Ile Asn Leu Ser Asn 1255 Ala	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu	1145 Lys His Leu Pro Ala 1225 Arg	Ser Leu Gln Ala 1210 Glu Phe Asn	Gly Ile Ala 1195 Gly Glu Ile Glu Ser	Met 1180 Gly Lys Gly Gly Thr 1260 Gly	Ile 1165 Pro Gly Val Ile Ile 1245 Lys	1150 Ile Ala Asn Thr His 1230 Lys Leu	Arg Pro Ile Leu 1215 Lys Val	Lys Val Glu 1200 Val His Gly Val Val
184 185 186 187 188 190 191 192 193 194 195 196 197 198 199 200	Tyr Thr Glu 1189 Ala Ala Glu Lys Arg 1269	Lys 1170 Leu San Gly Leu Ser 1250 Val	Phe 1155 Phe Thr Thr Glu Asp 1235 Asn	Thr Ala Thr Glu 1220 Val Tyr Ala	Lys Ser Asn Arg 1205 Leu Gln Ser Gln	Thr Thr Gly 1190 Phe Gln Lys Lys Thr 1270	Arg 1175 11e) Asn Leu Ser Asn 1255 Ala	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu Ala	1145 Lys His Leu Pro Ala 1225 Arg Leu Thr	Ser Leu Gln Ala 1210 Glu Phe Asn Arg	Gly Ile Ala 1199 Gly Glu Ile Glu Ser 1275	Met 1180 Gly Lys Gly Gly Thr 1260 Gly	Ile 1165 Pro Gly Val Ile 1245 Lys Trp	1150 Ile Ala Asn Thr His 1230 Lys Leu Asp	Arg Pro Ile Leu 1215 Lys Val Pro Thr	Lys Val Glu 1200 Val His Gly Val Val Val
184 185 186 187 188 190 191 192 193 194 195 196 197 198 200 201	Tyr Thr Glu 1189 Ala Ala Glu Lys Arg 1269	Lys 1170 Leu San Gly Leu Ser 1250 Val	Phe 1155 Phe Thr Thr Glu Asp 1235 Asn	Thr Ala Thr Glu 1220 Val Tyr Ala	Lys Ser Asn Arg 1205 Leu Gln Ser Gln	Thr Gly 1190 Phe Gln Lys Lys Thr 1270 Phe	Arg 1175 11e) Asn Leu Ser Asn 1255 Ala	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu Ala	1145 Lys His Leu Pro Ala 1225 Arg Leu Thr	Ser Leu Gln Ala 1210 Glu Phe Asn Arg Leu	Gly Ile Ala 1199 Gly Glu Ile Glu Ser 1275 Ala	Met 1180 Gly Lys Gly Gly Thr 1260 Gly	Ile 1165 Pro) Gly Val Ile Ile 1245 Lys	1150 Ile Ala Asn Thr His 1230 Lys Leu Asp	Arg Pro Ile Leu 1215 Lys Val Pro Thr	Lys Val Glu 1200 Val His Gly Val Val 1280 Gln
184 185 186 187 188 190 191 192 193 194 195 196 197 198 200 201 202	Tyr Thr Glu 1189 Ala Ala Glu Lys Arg 1269 Leu	Lys 1170 Leu San Gly Leu Ser 1250 Val Glu	Phe 1155 Phe) Thr Thr Glu Asp 1235 Asn) Val	Thr Ala Thr Glu 1220 Val Tyr Ala Thr	Lys Ser Asn Arg 1205 Leu Gln Ser Gln Glu 1285	Thr Gly 1190 Phe Gln Lys Lys Thr 1270 Phe	Lys Arg 1175 Ile Asn Leu Ser Asn 1255 Ala Lys	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu Ala	1149 Lys His Leu Pro Ala 1229 Arg Leu Thr	Ser Leu Gln Ala 1210 Glu Phe Asn Arg Leu 1290	Gly Ile Ala 1199 Gly Glu Ile Glu Ser 1275 Ala	Met 1180 Gly Lys Gly Gly Gly Gly Gly Gly Gly	Ile 1165 Pro Cly Val Ile 1245 Lys Trp Ala	Ala Asn Thr His 1230 Lys Leu Asp	Arg Pro Ile Leu 1215 Lys Val Pro Thr	Lys Val Glu 1200 Val His Gly Val Val 1280 Gln
184 185 186 187 188 190 191 192 193 194 195 196 197 198 200 201 202	Tyr Thr Glu 1189 Ala Ala Glu Lys Arg 1269 Leu	Lys 1170 Leu San Gly Leu Ser 1250 Val Glu	Phe 1155 Phe) Thr Thr Glu Asp 1235 Asn) Val	Thr Ala Thr Glu 1220 Val Tyr Ala Thr	Lys Ser Asn Arg 1205 Leu Gln Ser Gln Glu 1285 Glu	Thr Gly 1190 Phe Gln Lys Lys Thr 1270 Phe	Lys Arg 1175 Ile Asn Leu Ser Asn 1255 Ala Lys	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu Ala	1149 Lys His Leu Pro Ala 1229 Arg Leu Thr	Ser Leu Gln Ala 1210 Glu Phe Asn Arg Leu 1290 Asp	Gly Ile Ala 1199 Gly Glu Ile Glu Ser 1275 Ala	Met 1180 Gly Lys Gly Gly Gly Gly Gly Gly Gly	Ile 1165 Pro Gly Val Ile 1245 Lys Trp	Ala Asn Thr His 1230 Lys Leu Asp	Pro Ile Leu 1215 Lys Val Pro Thr Ile 1295 Leu	Lys Val Glu 1200 Val His Gly Val Val 1280 Gln
184 185 186 187 188 190 191 192 193 194 195 196 197 198 200 201 202 203 204	Tyr Thr Glu 1189 Ala Ala Glu Lys Arg 1269 Leu Ala	Lys 1170 Leu 5 Asn Gly Leu Ser 1250 Val 6 Glu Gly	Phe 1155 Phe Thr Thr Glu Asp 1235 Asn Val Gly Val	Thr Ala Thr Glu 1220 Val Tyr Ala Thr Gly 1300	Lys Ser Asn Arg 1205 Leu Gln Ser Gln Glu 1285 Glu	Thr Gly 1190 Phe Gln Lys Thr 1270 Phe Lys	Lys Arg 1175 Ile Asn Leu Ser Asn 1255 Ala Lys Ala	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu Ala Thr Arg	His Leu Pro Ala 1229 Arg Leu Thr Thr	Ser Leu Gln Ala 1210 Glu Phe Asn Arg Leu 1290 Asp	Gly Ile Ala 1199 Gly Glu Ile Glu Ser 1275 Ala Ala	Lys Met 1180 Gly Lys Gly Gly Gly Gly Gly Gly Lys	Ile 1165 Pro Cly Val Ile 1245 Lys Trp Ala	Ala Asn Thr His 1230 Lys Leu Asp Asp Ile 1310	Pro Ile Leu 1219 Lys Val Pro Thr Ile 1299 Leu	Lys Val Glu 1200 Val His Gly Val 1280 Gln Lys
184 185 186 187 188 190 191 192 193 194 195 196 197 198 200 201 202 203 204	Tyr Thr Glu 1189 Ala Ala Glu Lys Arg 1269 Leu Ala	Lys 1170 Leu 5 Asn Gly Leu Ser 1250 Val 6 Glu Gly	Phe 1155 Phe Thr Thr Glu Asp 1235 Asn Val Gly Val	Thr Ala Thr Glu 1220 Val Tyr Ala Thr Gly 1300 Asn	Lys Ser Asn Arg 1205 Leu Gln Ser Gln Glu 1285 Glu	Thr Gly 1190 Phe Gln Lys Thr 1270 Phe Lys	Lys Arg 1175 Ile Asn Leu Ser Asn 1255 Ala Lys Ala	Gly 1160 Asp Thr Ala Leu Arg 1240 Glu Ala Thr Arg	His Leu Pro Ala 1225 Arg Leu Thr Thr Val 1305 Glu	Ser Leu Gln Ala 1210 Glu Phe Asn Arg Leu 1290 Asp	Gly Ile Ala 1199 Gly Glu Ile Glu Ser 1275 Ala Ala	Lys Met 1180 Gly Lys Gly Gly Gly Gly Gly Gly Lys	Ile 1165 Pro Cly Val Ile 1245 Lys Trp Ala Ile	Ala Asn Thr His 1230 Lys Leu Asp Asp Ile 1310 Thr	Pro Ile Leu 1219 Lys Val Pro Thr Ile 1299 Leu	Lys Val Glu 1200 Val His Gly Val 1280 Gln Lys

RAW SEQUENCE LISTING DATE: 08/20/2004
PATENT APPLICATION: US/10/665,990A TIME: 10:38:11

Input Set : A:\PTO.LM.txt

	Thr	Val 1330		Gln	Lys	Gln	Ala 1335		Arg	Gly	Ser	Thr 1340		Glu	Thr	Leu
209	Lys	Leu	Pro	Ser	Phe	Glu	Ser	Pro	Thr	Pro	Pro	Lys	Leu	Ser	Ala	Pro
	134					1350					1355					1360
211 212	Gly	Gly	Tyr	Ile	Val 1365		Ile	Pro	Lys	Gly 1370		Leu	Lys	Thr	Glu 1379	
213 214	Glu	Lys	Leu		Lys)		Pro	Glu	Tyr 1385		Tyr	Leu	Lys	Gln 1390		Gln
	Wal	Δla	Luc				Trp	Δan			Gln	T.=11	Δla			Δνα
216			1395	5 .				1400)				1405	5		
	_			Lys	Gln	Glu	Gly		Thr	Glu	Ala			Ala	Ile	Ile
218		1410					1415			_	_	1420		_		
			Ala	Val	Thr		Val	Thr	Ser	Gly			Thr	Gly	Ala	
	142					1430					1435		_		_	1440
	Leu	Gly	Leu	Asn	_		Ala	Ala	Ala			Asp	Ala	Ala		
222			_		1445			_		1450					1455	
	Ser	Leu	Ala			Ala	Ser	Val			Ile	Asn	Asn	_		Asp
224			_	1460		_			146					1470	-	
	Val	Gly			Leu	Lys	Glu			Arg	Ser	Ser			Lys	Asn
226		_	1475		_	_		1480			_		1485		_	_
				Ala	Ala	Ala	Thr		Gly	Val	Ala	_	-	Ile	Gly	Ala
228		1490					1495					1500				
			Leu	Asn	Asn			Asp	Lys	Gln			Asn			Thr
	150					1510					1515					1520
	Val	Asn	Leu	Ala			Gly	Ser	Ala			Ile	Asn	Thr		
232					1525	=				1570	`					
	_			_			_	_	_	1530				_	1535	
233		Gly	Gly		Leu		Asp	Asn		Gly		Ala	Ala		Gly	
233 234				1540	Leu)	Lys			1545	Gly 5	Asp			1550	Gly	Ala
233 234 235	Ile		Ser	1540 Thr	Leu)	Lys	Asp Gly	Glu	1545 Val	Gly 5	Asp		Ile	1550 Lys	Gly	Ala
233 234 235 236	Ile	Val	Ser 1555	1540 Thr	Leu) Val	Lys His	Gly	Glu 1 560	1545 Val	Gly 5 Ala	Asp Ser	Lys	Ile 1565	1550 Lys	Gly O Phe	Ala Asn
233 234 235 236 237	Ile	Val Ser	Ser 1555 Glu	1540 Thr	Leu) Val	Lys His	Gly Thr	Glu 1560 His	1545 Val	Gly 5 Ala	Asp Ser	Lys His	Ile 1565 Ala	1550 Lys	Gly O Phe	Ala Asn
233 234 235 236 237 238	Ile Leu	Val Ser 1570	Ser 1555 Glu	1540 Thr Asp	Leu) Val Tyr	Lys His Ile	Gly Thr 1575	Glu 1560 His	1549 Val) Lys	Gly Ala Ile	Asp Ser Ala	Lys His	Ile 1565 Ala	1550 Lys 5 Ile	Gly) Phe Ala	Ala Asn Gly
233 234 235 236 237 238 239	Ile Leu Cys	Val Ser 1570 Ala	Ser 1555 Glu	1540 Thr Asp	Leu) Val Tyr	Lys His Ile Ala	Gly Thr 1575 Asn	Glu 1560 His	1549 Val) Lys	Gly Ala Ile	Asp Ser Ala Cys	Lys His 1580 Gln	Ile 1565 Ala	1550 Lys 5 Ile	Gly) Phe Ala	Ala Asn Gly Ile
233 234 235 236 237 238 239 240	Ile Leu Cys 158!	Val Ser 1570 Ala	Ser 1555 Glu) Ala	1540 Thr Asp Ala	Leu Val Tyr	Lys His Ile Ala 1590	Gly Thr 1575 Asn	Glu 1560 His Lys	1549 Val) Lys Gly	Gly Ala Ile Lys	Asp Ser Ala Cys 1599	Lys His 1580 Gln	Ile 1565 Ala) Asp	1550 Lys 5 Ile Gly	Gly Phe Ala Ala	Ala Asn Gly Ile 1600
233 234 235 236 237 238 239 240 241	Ile Leu Cys 158!	Val Ser 1570 Ala	Ser 1555 Glu) Ala	1540 Thr Asp Ala	Leu Val Tyr Ala	Lys His Ile Ala 1590 Glu	Gly Thr 1575 Asn	Glu 1560 His Lys	1549 Val) Lys Gly	Gly Ala Ile Lys Glu	Asp Ser Ala Cys 1595 Ala	Lys His 1580 Gln	Ile 1565 Ala) Asp	1550 Lys 5 Ile Gly	Gly Phe Ala Ala Gly	Ala Asn Gly Ile 1600 Lys
233 234 235 236 237 238 239 240 241 242	Ile Leu Cys 158! Gly	Val Ser 1570 Ala S	Ser 1555 Glu) Ala Ala	1540 Thr Asp Ala Val	Leu Val Tyr Ala Gly 1605	Lys His Ile Ala 1590 Glu	Gly Thr 1575 Asn O Ile	Glu 1560 His Lys Val	1549 Val) Lys Gly	Gly Ala Ile Lys Glu 1610	Asp Ser Ala Cys 1595 Ala	Lys His 1580 Gln Leu	Ile 1565 Ala) Asp Thr	1550 Lys 5 Ile Gly Asn	Gly Phe Ala Ala Gly 1615	Ala Asn Gly Ile 1600 Lys
233 234 235 236 237 238 239 240 241 242 243	Ile Leu Cys 158! Gly	Val Ser 1570 Ala S	Ser 1555 Glu) Ala Ala	1540 Thr Asp Ala Val	Leu Val Tyr Ala Gly 1605	Lys His Ile Ala 1590 Glu	Gly Thr 1575 Asn	Glu 1560 His Lys Val	1549 Val Lys Gly Gly Glu	Gly Ala Ile Lys Glu 1610 Arg	Asp Ser Ala Cys 1595 Ala	Lys His 1580 Gln Leu	Ile 1565 Ala) Asp Thr	1550 Lys 5 Ile Gly Asn Leu	Gly Phe Ala Ala Gly 1615 Ala	Ala Asn Gly Ile 1600 Lys
233 234 235 236 237 238 239 240 241 242 243 244	Ile Leu Cys 1589 Gly Asn	Val Ser 1570 Ala Ala Pro	Ser 1555 Glu Ala Ala Ala	Thr Asp Ala Val Thr 1620	Leu) Val Tyr Ala Gly 1605 Leu)	Lys His Ile Ala 1590 Glu Thr	Gly Thr 1575 Asn) Ile Ala	Glu 1560 His Lys Val	Lys Gly Glu 1625	Gly Ala Ile Lys Glu 1610 Arg	Asp Ser Ala Cys 1599 Ala Cys	Lys His 1580 Gln Leu Gln	Ile 1565 Ala Asp Thr	1550 Lys Ile Gly Asn Leu 1630	Gly Phe Ala Ala Gly 1615 Ala	Ala Asn Gly Ile 1600 Lys Tyr
233 234 235 236 237 238 239 240 241 242 243 244 245	Leu Cys 1589 Gly Asn	Val Ser 1570 Ala Ala Pro	Ser 1555 Glu) Ala Ala Ala	1540 Thr 5 Asp Ala Val Thr 1620 Val	Leu) Val Tyr Ala Gly 1605 Leu) Ala	Lys His Ile Ala 1590 Glu Thr	Gly Thr 1575 Asn The Ala	Glu 1560 His Lys Val Lys	1549 Val Lys Gly Gly Glu 1629 Ser	Gly Ala Ile Lys Glu 1610 Arg Gly	Asp Ser Ala Cys 1599 Ala Clu	Lys His 1580 Gln Leu Gln Val	Ile 1569 Ala Asp Thr Ile	1550 Lys 5 Ile Gly Asn Leu 1630 Gly	Gly Phe Ala Ala Gly 1615 Ala	Ala Asn Gly Ile 1600 Lys Tyr
233 234 235 236 237 238 239 240 241 242 243 244 245 246	Ile Leu Cys 1589 Gly Asn Ser	Val Ser 1570 Ala Ala Pro	Ser 1555 Glu) Ala Ala Ala Leu 1635	1540 Thr Asp Ala Val Thr 1620 Val	Leu) Val Tyr Ala Gly 1605 Leu) Ala	Lys His Ile Ala 1590 Glu Thr	Gly Thr 1575 Asn Ile Ala Thr	Glu 1560 His Lys Val Lys Val 1640	1549 Val Lys Gly Gly Glu 1629 Ser	Gly Ala Ile Lys Glu 1610 Arg Gly	Asp Ser Ala Cys 1599 Ala) Glu Val	Lys His 1580 Gln Leu Gln Val	Ile 1565 Ala) Asp Thr Ile Gly 1645	1550 Lys 5 Ile Gly Asn Leu 1630 Gly	Gly Phe Ala Ala Gly 1615 Ala)	Ala Asn Gly Ile 1600 Lys Tyr Val
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247	Ile Leu Cys 1589 Gly Asn Ser	Val Ser 1570 Ala Ala Pro Lys Thr	Ser 1555 Glu) Ala Ala Ala Leu 1635 Ala	1540 Thr Asp Ala Val Thr 1620 Val	Leu) Val Tyr Ala Gly 1605 Leu) Ala	Lys His Ile Ala 1590 Glu Thr	Gly Thr 1575 Asn Ile Ala Thr	Glu 1560 His Lys Val Lys Val 1640 Lys	1549 Val Lys Gly Gly Glu 1629 Ser	Gly Ala Ile Lys Glu 1610 Arg Gly	Asp Ser Ala Cys 1599 Ala) Glu Val	Lys His 1580 Gln Leu Gln Val	Ile 1565 Ala) Asp Thr Ile Gly 1645 Asn	1550 Lys 5 Ile Gly Asn Leu 1630 Gly	Gly Phe Ala Ala Gly 1615 Ala)	Ala Asn Gly Ile 1600 Lys Tyr Val
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248	Ile Leu Cys 1589 Gly Asn Ser Asn	Val Ser 1570 Ala Ala Pro Lys Thr 1650	Ser 1555 Glu) Ala Ala Ala Leu 1635 Ala	1540 Thr Asp Ala Val Thr 1620 Val	Leu) Val Tyr Ala Gly 1605 Leu) Ala Asn	Lys His Ile Ala 1590 Glu Thr Gly Ala	Gly Thr 1575 Asn Ile Ala Thr Ala 1655	Glu 1560 His Lys Val Lys Val 1640 Lys	1549 Val Lys Gly Gly Glu 1629 Ser Val	Gly Ala Ile Lys Glu 1610 Arg Gly Ala	Asp Ser Ala Cys 1599 Ala Glu Val	Lys His 1580 Gln Leu Gln Val Glu 1660	Ile 1565 Ala) Asp Thr Ile Gly 1645 Asn	1550 Lys Ile Gly Asn Leu 1630 Gly Asn	Gly Phe Ala Ala Gly 1615 Ala) Asp	Ala Asn Gly Ile 1600 Lys Tyr Val Leu
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249	Leu Cys 1589 Gly Asn Ser Asn	Val Ser 1570 Ala Ala Pro Lys Thr 1650 Gln	Ser 1555 Glu) Ala Ala Ala Leu 1635 Ala	1540 Thr Asp Ala Val Thr 1620 Val	Leu) Val Tyr Ala Gly 1605 Leu) Ala Asn	Lys His Ile Ala 1590 Glu Thr Gly Ala Ala	Thr 1575 Asn Ile Ala Thr Ala 1655 Leu	Glu 1560 His Lys Val Lys Val 1640 Lys	1549 Val Lys Gly Gly Glu 1629 Ser Val	Gly Ala Ile Lys Glu 1610 Arg Gly Ala	Asp Ser Ala Cys 1599 Ala Clu Val Ile Leu	Lys His 1580 Gln Leu Gln Val Glu 1660 Ile	Ile 1565 Ala) Asp Thr Ile Gly 1645 Asn	1550 Lys Ile Gly Asn Leu 1630 Gly Asn	Gly Phe Ala Ala Gly 1615 Ala) Asp	Ala Asn Gly Ile 1600 Lys Tyr Val Leu Lys
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250	Leu Cys 1589 Gly Asn Ser Asn	Val Ser 1570 Ala Ala Pro Lys Thr 1650 Gln	Ser 1555 Glu) Ala Ala Ala Leu 1635 Ala)	1540 Thr Asp Ala Val Thr 1620 Val Ala	Leu) Val Tyr Ala Gly 1605 Leu) Ala Asn	His Ile Ala 1590 Glu Thr Gly Ala Ala 1670	Thr 1575 Asn Ile Ala Thr Ala 1655 Leu	Glu 1560 His Lys Val Lys Val 1640 Lys Arg	1549 Val Lys Gly Glu 1629 Ser Val	Gly Ala Ile Lys Glu 1610 Arg Gly Ala Lys	Asp Ser Ala Cys 1595 Ala Clu Val Ile Leu 1675	Lys His 1580 Gln Leu Gln Val Glu 1660 Ile	Ile 1569 Ala) Asp Thr Ile Gly 1649 Asn)	1550 Lys Ile Gly Asn Leu 1630 Gly Asn	Gly Phe Ala Ala Gly 1619 Ala Asp Leu Ala	Ala Asn Gly Ile 1600 Lys Tyr Val Leu Lys 1680
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251	Leu Cys 1589 Gly Asn Ser Asn	Val Ser 1570 Ala Ala Pro Lys Thr 1650 Gln	Ser 1555 Glu) Ala Ala Ala Leu 1635 Ala)	1540 Thr Asp Ala Val Thr 1620 Val Ala	Leu) Val Tyr Ala Gly 1605 Leu) Ala Asn Tyr Leu	Lys His Ile Ala 1590 Glu Thr Gly Ala 1670 Ser	Thr 1575 Asn Ile Ala Thr Ala 1655 Leu	Glu 1560 His Lys Val Lys Val 1640 Lys Arg	1549 Val Lys Gly Glu 1629 Ser Val	Gly Ala Ile Lys Glu 1610 Arg Gly Ala Lys Gly	Asp Ser Ala Cys 1599 Ala O Glu Val Ile Leu 1679 Ser	Lys His 1580 Gln Leu Gln Val Glu 1660 Ile	Ile 1569 Ala) Asp Thr Ile Gly 1649 Asn)	1550 Lys Ile Gly Asn Leu 1630 Gly Asn	Gly Phe Ala Ala Gly 1615 Ala Asp Leu Ala Gln	Ala Asn Gly Ile 1600 Lys Tyr Val Leu Lys 1680 Glu
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252	Leu Cys 1589 Gly Asn Ser Asn Ser 1669 Gly	Val Ser 1570 Ala Ala Pro Lys Thr 1650 Gln Lys	Ser 1555 Glu Ala Ala Ala Leu 1635 Ala Clu	1540 Thr Asp Ala Val Thr 1620 Val Ala Glu Leu	Leu) Val Tyr Ala Gly 1605 Leu) Ala Asn Tyr Leu 1685	His Ile Ala 1590 Glu Thr Gly Ala 1670 Ser	Thr 1575 Asn Ile Ala Thr Ala 1655 Leu	Glu 1560 His Lys Val Lys Lys Arg Asp	1549 Val Lys Gly Glu 1629 Ser Val Glu Trp	Gly Ala Ile Lys Glu 1610 Arg Gly Ala Lys Gly 1690	Asp Ser Ala Cys 1599 Ala Cys Ala Uval Uval Leu 1679 Ser	Lys His 1580 Gln Leu Gln Val Glu 1660 Ile Leu	Ile 1565 Ala) Asp Thr Ile Gly 1645 Asn) Lys	1550 Lys Ile Gly Asn Leu 1630 Gly Asn Lys	Gly Phe Ala Ala Gly 1615 Ala Asp Leu Ala Gln 1695	Ala Asn Gly Ile 1600 Lys Tyr Val Leu Lys 1680 Glu
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253	Leu Cys 1589 Gly Asn Ser Asn Ser 1669 Gly	Val Ser 1570 Ala Ala Pro Lys Thr 1650 Gln Lys	Ser 1555 Glu Ala Ala Ala Leu 1635 Ala Clu	1540 Thr Asp Ala Val Thr 1620 Val Glu Leu Phe	Leu) Val Tyr Ala Gly 1605 Leu) Ala Asn Tyr Leu 1685 Ile	His Ile Ala 1590 Glu Thr Gly Ala 1670 Ser	Thr 1575 Asn Ile Ala Thr Ala 1655 Leu	Glu 1560 His Lys Val Lys Lys Arg Asp	1549 Val Lys Gly Glu 1629 Ser Val Glu Trp Glu	Gly Ala Ile Lys Glu 1610 Arg Gly Ala Lys Gly 1690 Lys	Asp Ser Ala Cys 1599 Ala Cys Ala Uval Uval Leu 1679 Ser	Lys His 1580 Gln Leu Gln Val Glu 1660 Ile Leu	Ile 1565 Ala) Asp Thr Ile Gly 1645 Asn) Lys	1550 Lys Ile Gly Asn Leu 1630 Gly Asn Lys Glu Ser	Gly Phe Ala Ala Gly 1615 Ala Asp Leu Ala Gln 1695 Asn	Ala Asn Gly Ile 1600 Lys Tyr Val Leu Lys 1680 Glu
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254	Leu Cys 1589 Gly Asn Ser Asn Ser 1669 Gly	Val Ser 1570 Ala Ala Pro Lys Thr 1650 Gln Lys Arg	Ser 1555 Glu Ala Ala Ala Leu 1635 Ala Glu Gly	Thr Asp Ala Val Thr 1620 Val Glu Leu Phe 1700	Leu) Val Tyr Ala Gly 1605 Leu) Ala Asn Tyr Leu 1685 Ile	His Ile Ala 1590 Glu Thr Gly Ala 1670 Ser Tyr	Thr 1575 Asn Ile Ala Thr Ala 1655 Leu	Glu 1560 His Lys Val Lys 1640 Lys Arg Asp	1549 Val Lys Gly Glu 1629 Ser Val Glu Trp Glu 1709	Gly Ala Ile Lys Glu 1610 Arg Gly Ala Lys Gly 1690 Lys	Asp Ser Ala Cys 1595 Ala Clu Val Ile Leu 1675 Ser Asp	Lys His 1580 Gln Leu Gln Val Glu 1660 Leu Arg	Ile 1565 Ala) Asp Thr Ile Gly 1645 Asn) Lys Thr	1550 Lys Ile Gly Asn Leu 1630 Gly Asn Lys Glu Ser 1710	Gly Phe Ala Ala Gly 1615 Ala Asp Leu Ala Gln 1695 Asn	Ala Asn Gly Ile 1600 Lys Tyr Val Leu Lys 1680 Glu Gln

RAW SEQUENCE LISTING ERROR SUMMARY PATENT APPLICATION: US/10/665,990A DATE: 08/20/2004

TIME: 10:38:12

Input Set : A:\PTO.LM.txt

Output Set: N:\CRF4\08202004\J665990A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

 $\mathtt{Seq\#:19;\ N\ Pos.\ 649,714,717,739,748,757,779,797,806,808,811,844,915,951,964}$

Seq#:19; N Pos. 988

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/665,990A

DATE: 08/20/2004 TIME: 10:38:12

Input Set : A:\PTO.LM.txt

Output Set: N:\CRF4\08202004\J665990A.raw

L:501 M:283 W: Missing Blank Line separator, <400> field identifier
L:1277 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:600
L:1278 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:660
L:1279 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:720
L:1280 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:780
L:1281 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:840
L:1282 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:900
L:1283 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:960